qualities, the winter fish being of inferior taste and texture. Clearly we must either continue to pack a second-rate product, or discover where our sprats go to in summer, invent methods of catching them, and finally adopt more "fastidious" methods of handling, all of which Dr. Johnstone clearly considers could be accomplished by further research. In contradistinction to the sprat our summer herring is said to be second to none.

After canning the flavour of the fish improves notably, the raw taste disappearing, the bones softening, and the flesh breaking easily; this is what is called "maturation," and the time required is from six months to as many years to give the best product. No suggestions or experiments to ascertain the cause of this proved satisfactory. It would not seem to be autolysis, for storage at a temperature of 37° C. did not hasten the process. Bacterial change is considered more likely, as spores can withstand a temperature of 150° C. if present in oil. Catalysis, however, cannot be ruled out, as the tin of the container is always to some degree dissolved. The whole question of "maturation" in respect to all canned foods is, as Dr. Johnstone says, "of huge practical importance—and of remarkable obscurity." It is certain that no commercial product can be stored for from three to six years and then sold cheaply.

The whole report is immature, in that the investigations were never made on a sufficient scale to be economically of value, and were prematurely closed down. It seems doubtful whether they can profitably be restarted until basal investigations, such as on the nitrogenous composition of the protein of fish in respect to phases of reproductive activity and to the formation of fat, are completed. On freezing and maturation the Food Investigation Board,[1] in the midst of other investigations, had been conducting researches for three years, but it is quite clear that there is plenty of room for less "directed" researches. Either the Fishery Boards should take up the whole problem, directly or through the Food Investigation Board, and vigorously prosecute it—even employing bounties if necessary—with a determination to create a new industry of value to an island nation, or drop it altogether. The Scottish Fishery Board made the export of salt herrings—in 1913 8,795,232 cwts. of value 5,331,042*l.*—a valuable British industry, by pursuing a consistent, steady policy through several decades. In the twentieth century Government officials seem to have little of the imagination required or to be afraid of the fluctuations of political affairs. They need not be, for surely these developments are national and not political, and such as "the man in the street"—and in the Commons—requires.

J. STANLEY GARDINER.

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[1] See Report for 1920. (H.M. Stationery Office.) 1*s.*

Our Bookshelf.

The Microtomist's Vade-Mecum: A Handbook of the Methods of Microscopic Anatomy. By A. B. Lee. Eighth edition. Edited by Prof. J. B. Gatenby, with the collaboration of Prof. W. M. Bayliss and others. Pp. x+594. (London: J. and A. Churchill, 1921.) 28*s.* net.

THE new edition of this well-known work of reference has been completely revised by Prof. Gatenby, who has had the assistance of experts in various branches of microscopical technique, and the result is a volume which is practical, critical, and thoroughly up-to-date. Prof. W. M. Bayliss has rewritten the chapter on staining, and his concise account of the nature of staining and of differentiation gives a clear conception of the physico-chemical facts on which these processes are based. Dr. C. Da Fano has been responsible for the five chapters on neurological technique, which form 100 pages of the book and contain many suggestions drawn from his extensive experience. Dr. A. Drew has rewritten the section on Protozoa, which, in addition to the methods for fixation, staining, etc., gives an account of cultural methods for amœbæ; Dr. W. Cramer contributes a dozen pages on the micro-technique of fatty substances, including a useful summary of the methods to be employed in a complete histochemical investigation of fatty cell-inclusions; and Mr. J. T. Carter has revised the account of methods for the study of teeth and bone. The remainder of the work has been in Prof. Gatenby's hands, and the sections on fixation, chromatin, nucleoli, mitochondria, and the Golgi apparatus are especially noteworthy and helpful in suggestions; mention should also be made of the short account of methods of tissue culture *in vitro*, which, in the hands of Ross Harrison and his successors, have given such remarkable results. The last chapter has been written for the beginner and gives clear directions for carrying through the preparation of a whole mount of a Daphnia, for making sections of muscle or other tissue of a vertebrate, and for preparing a tadpole for serial sections.

Two recent methods for staining bacteria have been introduced to help those who may be doubtful whether certain bodies in tissue are or are not bacteria. Having gone so far, the editor might perhaps consider whether he could include in the next edition the methods for the study of spirochætes which zoologists nowadays frequently find it necessary to examine. Under Annelids a reference to the preparation and mounting of chætæ would also be a useful addition

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The editor and his collaborators are to be warmly congratulated on the production of this thoroughly sound and practical guide, useful alike to students and to research workers.

A French-English Dictionary for Chemists. By Dr. Austin M. Patterson. Pp. xvii + 384. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1921.) 18*s.* net.

THE present volume is a companion work to the author's "German-English Dictionary for Chemists," and is likely to meet with an equally favourable reception. A practical test, working through original papers in organic chemistry, inorganic chemistry, and technical (engineering) chemistry proved the usefulness of the dictionary; only on the engineering side were a few deficiencies found. Chemistry has several other sciences on its borders, and this is recognised practically by the inclusion of some biological and botanical terms. The addition of technical words from mathematics, geology, and engineering, with more words from physics, botany, biology, and medicine would widen the scope of the book without necessarily increasing its bulk. It is stated in the introduction that "words of the same or nearly the same spelling in the two languages are defined even when the meaning is exactly the same as in English." This appears to the reviewer as a defect; the space might be better utilised in the direction just indicated. Thus, taking a page (368) at random, out of seventy-eight words sixteen have identical spellings and meanings; of the remainder, twenty-one are practically the same, and the obvious translation is the correct one, such as *uniforme, unimoléculaire, uranyle, ultramicroscopique.*

Handbuch der Holzkonservierung. Edited by Ernst Troschel. Pp. xi + 540. (Berlin: Julius Springer, 1916.) In Germany, 18 marks; in England, 54 marks.

TWELVE authors, comprising engineers, architects, foresters, and professors, have produced this comprehensive text-book, which contains the result of the latest investigations until 1916, on the preservation of wood. The book is clearly written and well illustrated. It contains references to most of the literature that has been published on the subject, in English as well as in German, and frequently discusses processes and materials used in England, India, the United States, etc.

The matter is arranged as follows: After an introductory chapter on the structure, function, and growth of wood and its tissues, part 1 deals with the destruction of wood by fungi, animals, and other agents. Dry-rot caused by Merulius, Lenzites, and other fungi, and the numerous injuries due to insects and marine borers, are treated at considerable length. The second part discusses the methods that are actually employed in preserving wood. These are very numerous, and most attention is paid to the processes involving impregnation with antiseptics, applied with or without pressure. The materials and machinery used are described in detail. The history of the subject is illustrated by a list of all the substances that have been tried from 1700 to 1876, with the name of the inventor and mode of application in each case.

The third part is concerned with the care of wood put to use under various conditions, as in the open air, under water, inside houses, etc. The influence of moisture and the action of chemical preservatives on the strength and durability of timber are briefly treated, most reliance being placed on Janka's experiments at Mariabrunn. The fourth part is very practical, containing special articles by engineers on the problems connected with the maintenance and preservation of the wood used in mines, railways, telegraphs, docks, bridges, ships, houses, street-paving, etc. An appendix, pp. 498–540, gives a list, classified under forty headings, of the most important patents in connection with the preservation of wood that have been taken out in all civilised countries.

Liquid and Gaseous Fuels and the Part they Play in Modern Power Production By Prof. Vivian B. Lewes. Second edition. Revised and edited by John B. C. Kershaw. (The "Westminster" Series.) Pp. xiv + 353. (London: Constable and Co., Ltd., 1921.) 12*s.* 6*d.* net.

IN his revision of Prof. Lewes's work on liquid and gaseous fuels, Mr. Kershaw has adopted the plan, dictated in part, no doubt, by the need for economy, of inserting new matter in the form of footnotes collected at the end of each chapter. Thus when Prof. Lewes ventures upon a definition of an atom, we are referred to a footnote some five pages further on for more modern views on the subject; this becomes irritating. Substantial additions have been made to the first edition, which was reviewed in NATURE of December 5, 1907, p. 98, in the form of information relating to the manufacture and use of power alcohol, and in the appendices, which contain accounts of fuel oil burners and vertical continuous retorts for gas manufacture, as well as extracts of recent statistics of oil fuel burning.

The Fixation of Atmospheric Nitrogen. By Dr. Joseph Knox. (Chemical Monographs.) Second edition. Pp. vii + 124. (London: Gurney and Jackson, 1921.) 4*s.* net.

IN the revision of his useful little monograph Dr. Knox has added brief accounts of the Haber process and of ammonia oxidation. The statement in the preface that "comparatively little work of importance on the theoretical side has appeared since the first edition of this book was published" is scarcely justified, and the fact that, of the 169 references to the literature which are given, only about fifteen are of dates later than 1913 is not what one might expect. The account of the Serpek process, for example, is quite out of date, and no reference to Serpek's later publication is given. The book will no doubt prove as useful to students as the first edition, and is a readable introduction to a most important subject.

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